WHAT IS CLAIMED IS:

1. A method for determining the wear to a battery comprising:

determining the temperature of a battery; and

determining a wear variable over time as a function of the battery temperature;

wherein the wear variable is determined as a sum of temperature-dependent wear contributions over time, with the values of the wear contributions rising more than proportionally as the battery temperature rises.

2. The method of Claim 1 wherein the wear variable is dependent on the battery temperature in accordance with the formula

$$Q_v = K_0 * c * \exp(-E/T)dt$$

where T is a value which corresponds approximately to the battery temperature, K_0 is a defined proportionality factor, c and E are defined constants, and dt is a time interval.

3. The method of Claim 1 wherein the dependency of the wear variable on the battery temperature is differentiated on the basis of temperature bands.

4. The method of Claim 1 wherein the wear variable increases linearly with the battery temperature over time and linearly with time for battery temperatures between a lower limit temperature and an upper limit temperature.

5. The method of Claim 4 wherein the wear variable remains constant over time for a battery temperature below the lower limit temperature.

6. The method of Claim 1 further comprising calculating wear contributions in time intervals, with the wear contributions increasing more than proportionally with the battery temperature for battery temperatures above an upper limit temperature.

7. The method of Claim 6 wherein the wear contributions for battery temperatures above the upper limit temperature are calculated in accordance with the formula:

$$q_v = K_0 * A * (1 + a * T + b * T^2)dt,$$

where K_0 is a proportionality factor, A is a time parameter, a is a first temperature coefficient and b is a second temperature coefficient.

8. The method of Claim 7 wherein the wear contributions for battery temperatures below the upper limit temperature are calculated in accordance with the formula

$$q_v = K_0 * B(T - T_1)dt,$$

where K_0 is a proportionality factor and B is a time parameter.

9. The method of Claim 7 wherein the wear contributions for battery temperatures above a lower limit temperature and below the upper limit temperature are calculated in accordance with the formula

$$q_v = K_0 * B(T - T_1)dt,$$

where K_0 is a proportionality factor and B is a time parameter, and the wear contributions for battery temperatures below the lower limit temperature are equal to zero.

10. The method of Claim 6 wherein the wear contributions are calculated in time intervals, with the time intervals each being of such a size as a function of the battery temperature that the battery temperature is approximately constant.

11. The method of Claim 1 wherein the battery has a storage capacity and the wear variable is a measure of the storage capacity of the battery, with the wear variable being related to the storage capacity of the battery at an earlier time than the time which is applicable to the wear variable.

12. The method of Claim 11 wherein the storage capacity of the battery relating to the earlier time is an initial capacity of the battery in a new state.

13. The method of Claim 12 wherein the wear variable relating to the earlier time is zero.

14. The method of Claim 11 further comprising calculating a present storage capacity of the battery from the difference between an initial capacity of the battery in a new state and the wear variable.

15. The method of Claim 1 further comprising determining a linked wear variable from the wear variable and further state variables which describe a state of the battery.

16. A storage battery for motor vehicles comprising:

temperature measurement means; and

computation means for calculating a wear variable of the storage battery;

wherein the computation means is configured to calculate the wear variable as a function of measured battery temperature using a method comprising:

determining the temperature of a battery; and

determining a wear variable over time as a function of the battery temperature;

wherein the wear variable is determined as a sum of temperature-dependent wear contributions over time, with the values of the wear contributions rising more than proportionally as the battery temperature rises.

17. A system provided with an electrochemical energy store comprising:

a temperature measurement device; and

a computation device;

wherein the computation device calculates a wear variable as a function of measured battery temperature according to a method comprising:

determining the temperature of a battery; and

determining a wear variable over time as a function of the battery temperature;

wherein the wear variable is determined as a sum of temperature-dependent wear contributions over time, with the values of the wear contributions rising more than proportionally as the battery temperature rises.